Valves for the Energy Industry

- Double Block and Bleed
- Flush and Bleed Rings
- Instrument and Transmitter Isolation Valves
- Low-Emission Packing Design
- Process Flow
- Sampling
2-Way Welded Instrument Valves
Instrument Isolation and Process Flow

PBM’s Instrument Valves are used for process flow or isolation of pressure gauge, orifice plates, flush rings and various measurement instruments. Valves are designed to ASME B16.34. They offer a higher performance solution to needle valves.

PBM Double Block and Bleed Valves are custom engineered from standard components in a variety of alloys and pressure classifications to meet customer specifications. All PBM double block and bleed valves are made in the USA and have full supporting material and testing documentation available. PBM valves are trusted by major oil refineries where safety and reliability are critical. Valves are also designed to ASME B16.34.

Sizes
1/4” to 2” with available bore sizes of .41”, .50”, and .75”

Pressure Class
Up to ANSI Class 2500 (Class 1500 standard)

End Connections
• Extended Male or Female NPT
• Male or Female NPT
• Flanged
• Butt weld (tube or pipe)
• Ext. Socket Weld
• Compression
• Instrument Adapter Flange
• Others Available

Features
• Quarter Turn Operation
• Optional Extended Handle with lock out
• Bleed or Gauge Ports Available
• Soft and Metal Seated Designs
• Welded body
• Rodable in 1/4” - 2”
• API-622 Low-E Stem Packing Standard
• SIL-3 Capable per IEC 61508
• API-607 Fire Rated
• Certified to API-641
• Can comply with API-6D if specified

Materials
• Stainless Steel
• Duplex Stainless Steel
• Carbon Steels
• Monel®
• Hastelloys®
• Others Available

Seating
• V-TEF™ Seats: 350°F (176°C)
• S-TEF® Seats: 400°F (204°C)
• PEEK® Seats: 500°F (260°C)
• C-TEF™ Seats: 600°F (315°C)
• Stellite® Ball & Seats: 800°F (427°C)
• Tungsten or Chrome Carbide Coated S/S Ball & Seats: 800°F (427°C)

Packing
• Die Molded Graphite (High Temp.)
• C-TEF™, V-TEF™ or S-TEF®
• API-622 Low-E Stem Packing Standard

Testing and Documentation
• MTR (Material Test Reports)
• PMI (Positive Material Identification)
• LP (Liquid Penetrant)
• Radiographic Examination
• Pressure Testing per API 598
• Magnetic Particle Examination
• Ultrasonic Examination

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<table>
<thead>
<tr>
<th>2-Way Valve with .41 dia. Port End Fitting</th>
<th>A in.</th>
<th>A mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ext. Male NPT</td>
<td>6.50</td>
<td>165</td>
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<tr>
<td>Male NPT</td>
<td>4.75</td>
<td>121</td>
</tr>
<tr>
<td>Female NPT</td>
<td>4.00</td>
<td>102</td>
</tr>
<tr>
<td>Ext. Female Socket Weld</td>
<td>6.50</td>
<td>165</td>
</tr>
<tr>
<td>Butt weld for Sch. 40 Pipe</td>
<td>6.50</td>
<td>165</td>
</tr>
<tr>
<td>Butt weld for Tube</td>
<td>6.50</td>
<td>165</td>
</tr>
</tbody>
</table>

Notes: Dimensions shown for Class 1500 1/2” valves only. Design is rodable with rod out tool.
Welded Double Block & Bleed Valves
Instrument Isolation & Process Flow

PBM double block and bleed valves provide true double positive isolation:
• Two independent sealing members (two ball and seat combinations)
• Two separate actuating mechanisms (two stems and handles or actuators)

This configuration provides the best technology for the most severe isolation services where double block and bleed is required.

Double Positive Isolation when safety is critical.

True DPI in 5 configurable body styles:
• Smaller than traditional 2 valve designs
• Lower potential emissions due to less flange connections
• 1/2” - 12”
• Full or standard (reduced) port
• Fire rated to API 607
• API-622/641 low emissions standard
• Various bleed or purge options available
• Extended handles available
• 1/4 turn ball valve enables easy open/close and visual indication of valve position

<table>
<thead>
<tr>
<th>DBB VALVE .41 dia. port end fitting</th>
<th>A in.</th>
<th>A mm</th>
<th>B in.</th>
<th>B mm</th>
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</thead>
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<tr>
<td>Extended Male NPT</td>
<td>8.25</td>
<td>210</td>
<td>3.25</td>
<td>83</td>
</tr>
<tr>
<td>Male NPT</td>
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<td>60</td>
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<td>Female NPT</td>
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<td>146</td>
<td>2.00</td>
<td>51</td>
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<tr>
<td>Ext. Female Socket Weld</td>
<td>8.25</td>
<td>210</td>
<td>3.25</td>
<td>83</td>
</tr>
<tr>
<td>Buttweld for Sch. 40 Pipe</td>
<td>8.25</td>
<td>210</td>
<td>3.25</td>
<td>83</td>
</tr>
<tr>
<td>Buttweld for Tube</td>
<td>8.25</td>
<td>210</td>
<td>3.25</td>
<td>83</td>
</tr>
</tbody>
</table>

Notes: Dimensions shown for 1/2” valves only. Design is rodable with rod out tool.

IMI PBM DBB/DPI IM (Instrument Valve)
with locking lever handles and ends and API 622 Low-E packing
• Temp: <800°F (427°C)
• Pressure: CL 2500
• Sizes: 1/2” - 1 inch
• Ends: Any

IMI PBM Standard/DPI IM (Instrument Valve)
with locking lever handles
• Temp: <800°F (427°C)
• Pressure: 2000 WOG
• Sizes: 1/4” - 1”
• Ends: Any
Bolted Instrument Valves

PBM’s bolted Instrument Valve design allows end connection design and fabrication flexibility. It is available in a wide range of materials for a variety of temperature and pressure classes to meet your most stringent process applications.

Features
• Full and Reduced Port Designs
• Customizable End Connections
• Quarter Turn Operation
• Bleed or Gauge Ports Available
• Bolted Body
• API-607 Fire Rated
• Braided Graphite Packing
• API-641 Low-E, Standard
• Gear Operator recommended for 1-1/2” and above

Sizes
1/2” - 2” CL600, CL900 and CL1500

Seating
• V-TEF™ Seats: 350˚F (176˚C)
• S-TEF® Seats: 400˚F (204˚C)
• PEEK® Seats: 500˚F (260˚C)
• C-TEF™ Seats: 600˚F (315˚C)
• Stellite® Ball & Seats: 800˚F (427˚C)
• Tungsten or Chrome Carbide Coated S/S Ball & Seats: 800˚F (427˚C)

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### Size | Ends | Units | Overall length (CL600 / CL1500) | Distance to top of valve (CL600 / CL1500) | Body width without ends (CL600 / CL1500) | Handle radius (CL600 / CL1500) | Locking mechanism (CL600 / CL1500)
--- | --- | --- | --- | --- | --- | --- | ---

#### 1/2” DN 15
- Flanged
  - Female NPT: 4.75 (121) in (mm)
  - Others: 8.50 (216) in (mm)
- Female NPT: 1.72 (44) in (mm)
- Others: 3.02 (77) in (mm)

#### 3/4” DN 20
- Flanged
  - Female NPT: 7.50 (191) in (mm)
  - Others: 9.00 (229) in (mm)
- Female NPT: 2.33 (59) in (mm)
- Others: 4.06 (103) in (mm)

#### 1” DN 25
- Flanged
  - Female NPT: 6.00 (152) in (mm)
  - Others: 10.00 (254) in (mm)
- Female NPT: 2.92 (74) in (mm)
- Others: 4.81 (122) in (mm)

#### 1-1/2” DN 40
- Flanged
  - Female NPT: 9.51 (242) in (mm)
  - Others: 12.01 (305) in (mm)
- Female NPT: 2.82 (72) in (mm)
- Others: 4.17 (106) in (mm)

#### 2” DN 50
- Flanged
  - Female NPT: 11.50 (292) in (mm)
  - Others: 14.50 (368) in (mm)
- Female NPT: 3.42 (87) in (mm)
- Others: 4.82 (122) in (mm)

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Bolted Double Block & Bleed Valves

PBM valves with Low-E packing offer solutions to emission reduction.

Design features:

- Average stem packing leakage ≤ 10 ppmv for the duration of the test (100 ppm allowable)
- API 607 fire tested
- The high temperature valve version utilizes carbide-coated ball and seats
- Temp: < 800°F (427°C)
- Pressure: CL 1500
- Sizes: 3", 4" (CL600 only)
- Ends: Any

<table>
<thead>
<tr>
<th>Size</th>
<th>Ends</th>
<th>Units</th>
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<tr>
<td>1/2&quot; DN 15</td>
<td>Flanged in (mm)</td>
<td>11.00 (279) / 12.50 (318) / 4.25 (108) / 5.00 (127)</td>
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<tr>
<td></td>
<td>Female NPT in (mm)</td>
<td>8.50 (216) / 3.75 (95) / 4.81 (122) / 4.50 (114) / 14.06 (357) / 2.57 (65)</td>
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<td>Others in (mm)</td>
<td>12.56 (319) / 5.03 (128)</td>
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<td>3/4&quot; DN 20</td>
<td>Flanged in (mm)</td>
<td>10.00 (254) / 11.50 (292) / 3.75 (95) / 4.50 (114) / 10.09 (256) / 2.08 (53)</td>
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<td>Female NPT in (mm)</td>
<td>8.00 (203) / 2.75 (70) / 2.50 (64) / 4.06 (103) / 3.75 (95)</td>
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<td>Others in (mm)</td>
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<td>1&quot; DN 25</td>
<td>Flanged in (mm)</td>
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<td>Female NPT in (mm)</td>
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<td>Others in (mm)</td>
<td>10.25 (260) / 4.25 (108)</td>
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<td>Female NPT in (mm)</td>
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<td>Female NPT in (mm)</td>
<td>11.75 (298) / 14.25 (362) / 4.00 (102) / 4.50 (114) / 6.75 (171) / 8.00 (203) / 18.06 (459) / 24.06 (611) / 3.45 (88)</td>
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<td></td>
<td>Others in (mm)</td>
<td>17.06 (433) / 6.67 (169)</td>
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</table>
Ordering IM or IB Valves

How to order IM or IB valves (Other options are available on request):

Flush Rings/Bleed Rings with Integral Valve
Flush rings and bleed rings to customer material and pressure class specifications designed to fit between standard flanges using conventional flange gaskets. Integral ball valve allows venting, purging, sampling and instrument isolation.

Sizes
Face-to-face is 2” standard. Consult factory for other widths.

Materials
• Stainless Steel
• Duplex
• Hastelloy®
• Others Available

Features
Integral code-welded valve for flushing, purging and instrument isolation.
Transmitter Isolation Valves

PBM Transmitter Isolation Valves (TIV) are valves used to isolate media in a tank from a pressure/level transmitter. The valve when in the open position creates a communication between the media in the tank and the transmitter. The valve is only closed when the transmitter needs to be isolated for service.

TIV valves feature minimal dead space and positive shut-off. They are available in CL150, CL300, and CL600 RF Flange. Calibration port, CIP port, and locking handle are standard. Cast body, universal design, in stock.

Full or True Bore® Port ANSI Style Transmitter Isolation Valves provide value to the customer.
Transmitter Isolation Valves: CL300 / CL600

ANSI CL300

- Pressure classes: 150-600
- Sizes: 1 x 2, 1 x 3, and 2.5 x 3 Inch (ball port size x flange size)
- Any material type
- Temps: <800˚F (427˚C)
- Purge/Cal port sizes: 1/4 or 1/2 inch FNPT (2 or 4 ports available)
- Custom configurations available

Example case: 2" PBM TIV on 4 inch ABB Wedge Meter Heavy Crude Line in a Coker Unit
Fabflex® Instrumentation Valve Manifolds

IMI PBM’s Valve Manifolds are designed to handle upper temperatures that range from 300°F to 600°F (149°C to 316°C) with working pressures from 150 to 400 PSIG (10 to 28 BARG). A refinery uses these manifolds for measuring as well as level indication.

Fabflex® fabricated manifold solution:

• Custom PBM Fabflex® manifold design for multiple instrumentation mounts
• Custom manifold design to optimize space utilization.
• Factory fabricated in a controlled manufacturing environment to ensure high quality welding fabrication process.
• Individual valves fabricated “into” the manifold eliminating many emission leak paths to improve the overall EPA rating of the system.
• Field installation simplified into bolting up one flange and installing the transmitters, transducers or other instrumentation.
Unique Valve Applications

**Fabflex Manifold® Assembly**
Various configurations available

**ANSI Style Double Block & Bleed Valve**

**Lockable Manual Handles**
Standard and automation available

**Sampling Valve**
Available in single and double block configurations

**ANSI Trunnion (TN Series) Valve**

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Technical Information

Instrument Valve Pressure/Temperature and Torque Charts:

**IB/IM Valve: Seat Pressure vs Temperature Chart Class 1500**

**IB 600# Valve: Seat Pressure vs Temperature**

**IB Sizing Torque (S-Tef Seats)**

**IB Sizing Torque (Metal Seats)**

**IMI PBM Pressure Class**

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<th>Rating Size</th>
<th>150</th>
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</table>

**IMI Critical Engineering IMI PBM**

**IMI PBM Pressure Class Chart Class 1500**

**Technical Information**

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**IB Sizing Torque (Metal Seats)**